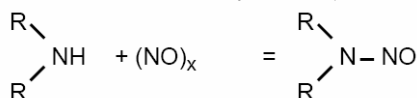


## Terra XPS®: Free of Nitrosamines

Recently, in The Netherlands discussion started about release of Nitrosamines from tire derived infill material for artificial turf. Since significant traces of carcinogenic Nitrosamines are found in an air sample, taken on a 1 year old artificial pitch, the Dutch government has started a more intense study towards these components. The final report of this study is expected in the next coming months.

Nitrosamines are formed during the processing, mainly during vulcanisation, of rubber. Then, at high temperatures, secondary (stable) amines, like vulcanisation accelerators (these increase the vulcanisation speed) and anti-oxidants may react with nitrosable components (NO<sub>x</sub>-formation) which can be found in carbon black and silica.



(secondaire amine) + (nitroserende stof) = (N-nitrosamine)

All rubber compound types (e.g. natural rubber, SBR, EPDM, isoprene rubber, etc.) can produce Nitrosamines. It is possible to avoid the formation of Nitrosamines, by selecting the right, but even more important, avoid certain ingredients.

It is commonly known in the rubber industry that Nitrosamines may be formed during rubber processing and vulcanisation when certain ingredients are used<sup>1</sup>.

### Terra XPS® is free of Nitrosamines!!

Terra XPS® is not a rubber, but a Thermoplastic Elastomer, which does not have to be vulcanised, in contrary to normal rubber. Vulcanisation ingredients, which are able to form Nitrosamines, are not applied, so not present in Terra XPS®. Therefore it is very unlikely or impossible that Terra XPS® can contain Nitrosamines. This is further supported by a test, which is done by a specialised laboratory. With GC-TEA analysis Terra XPS® was tested on following components:

Nitrosodimethylamine(n)	Nitrosodiethylamine(n),	Nitrosodibutylamine(n),	Nitrosopiperidine(n),
Nitrosopyrrolidine(n),	Nitrosomorpholine(n),	Nitrosomethylphenylamine(n),	Nitrosodipropylamine(n),
Nitrosoethylmethylamine(n)	Nitrosodibenzylamine(n)	Nitroso-N-ethylaniline(n)	Nitrosodiethanolamine(n-)
Nitrosodiisobutylamine(n)	Nitrosodiisopropylamine(n),	Nitrosomethylaniline (n-n-)	Nitrosodipentylamine(n)

**None of these Nitrosamines were found in Terra XPS®, which means that Terra XPS® does not contain carcinogenic Nitrosamines.**

**This result supports our goal that Terra XPS® has to stand for the highest safety for man and environment.**

For more information or questions, you can contact ir. Bart Wijers, Technical Manager of Terra Sports Technology BV:

Tel: +31 (0)46 436 1618  
 @: [b.wijers@terra-xps.com](mailto:b.wijers@terra-xps.com)  
[www.terra-xps.com](http://www.terra-xps.com)

<sup>1</sup> Hofmann. W  
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**ANALYSE CERTIFICAAT**

Opdrachtgever : DSM Thermoplastic Elastomers B.V.  
Adres : Postbus 43  
Postcode woonplaats : 6130 AA Sittard  
Land : NL  
Orderdatum : 02-10-2006  
Rapportagedatum : 10-10-2006  
Projectnummer RPS Analyse : 06100004  
Projectnummer opdrachtgever :  
Monsternummer RPS Analyse : 06100004.001  
Monsternummer opdrachtgever : Terra XPS 100101  
Soort materiaal : Rubber

**RPS Analyse B.V.**  
E milieu@rpsgroep.nl  
W www.rpsmilieu.nl

Bank HBU 62 23 48 175  
KvK 20059540

**Ulvenhout**

Tolweg 11  
PO Box 3440,  
4800 DK Breda

T +31(0)76 - 571 58 80  
F +31(0)76 - 561 56 99

**Hoogeveen**

Zeppelinstraat 9  
PO Box 2030,  
7900 BA Hoogeveen

T +31 (0)528 - 22 90 10  
F +31 (0)528 - 22 90 18

Dit onderzoek had plaats met als doel de aanwezigheid van in onderstaande tabel genoemde componenten aan te tonen. Alleen aan het originele complete ANALYSE CERTIFICAAT kunnen rechten worden ontleend. Dit rapport mag uitsluitend in zijn geheel worden gereproduceerd. De resultaten hebben uitsluitend betrekking op het aangeboden monster.

**Nitrosamines (Methode: GC-TEA)**

Nitrosodimethylamine(n)	< 5 µg/kg
Nitrosodiethylamine(n)	< 5 µg/kg
Nitrosodibutylamine(n)	< 5 µg/kg
Nitrosopiperidine(n)	< 5 µg/kg
Nitrosopyrrolidine(n)	< 5 µg/kg
Nitrosomorpholine(n)	< 5 µg/kg
Nitrosomethylphenylamine(n)	< 5 µg/kg
Nitrosodipropylamine(n)	< 5 µg/kg
Nitrosoethylmethylamine(n)	< 5 µg/kg
Nitrosodibenzylamine(n)	< 5 µg/kg
Nitroso-N-ethylaniline (n)	< 5 µg/kg
Nitrosodiethanolamine(n-)	< 5 µg/kg
Nitrosodiisobutylamine(n)	< 5 µg/kg
Nitrosodiisopropylamine(n)	< 5 µg/kg
Nitrosomethylaniline (n-n-)	< 5 µg/kg
Nitrosodipentylamine(n)	< 5 µg/kg

  
Paraaf productmanager  
Paraaf projectcoördinator